Year A				
(2023/24)				
upper school Year 4, year 5 year 6	Core knowledge	Scientific enquiry questions (working scientifically skills)		
term 1	Living things and their Habitats Recognise that living things can be grouped in a variety of ways. (Living things and their habitats) 4 Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. (Living things and their habitats) 4	 Identifying, classifying and grouping y4/5- Can you organise different plants/ animals into different groups? Y4/5- How would you use a classification key to identify all the minibeasts we found on the paddock? Y6- Can you group animals based on their characteristics? present results 		
	Give reasons for classifying plants and animals based on specific characteristics. (Living things and their habitats) 6	Observing over time: Y6-How did Linnaeus' ideas help us to group plants? Y4/5- Does the accumulation of organisms in our paddock change over the course of a month? Gather and record results		
	Key scientist and Science capital opportunities: -Pond dipping - Trip to Cotswold wildlife park and classify the different minibeasts and compare to ones on paddock. -Trip to local park/ woodland to classify different plants/ trees. Carl Linnaeus (Developed the modern system of classifying	Linked texts: United texts: Organization Status United texts: United texts:		
	and naming organisms)			
term 2	Materials Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic. (Materials)5 Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets. (Materials)5 (Materials)5	Observing changes over time: How does a nail in saltwater change over time? Observe and measure		
		Y5/6-What are microplastics and why are they harming our planet? Gather and record results		
		Identifying, classifying and groupingCan you organise different materials into groupsbased on their properties?present and interpret results		
		Comparative testing and fair testing: Y4/5-Which shoe soles are the most slippery? Y5/6-Which materials are the best for a firefighter/ astronaut to wear? Make a prediction Conclude and evaluate		

	Key scientist and Science capital opportunities: -visit from firefighter to discuss their uniform and its materials and their properties Daniel Fahrenheit (Invented temperature scale and mercury thermometer) Spencer Silver (Inventor of Post-it® notes)	Linked texts: Spacesuit Fixed PLASTIC
term 3	Evolution and inheritance Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. (Evolution and inheritance) 6	Research and secondary sources: Y4/5-What did Darwin discover when he visited the Galapagos islands? Y5/6-What ideas did American geneticist Barbara McClintock have about genes that won her a Nobel Prize? Gather and record results
	Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents. (Evolution and inheritance)6 <u>https://practicalbiology.org/evolution/modelling-natural-selection</u>	Pattern seeking: Is there a pattern between the size and shape of a bird's beak and the food it will eat? Interpret results
	Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution. (Evolution and inheritance) 6 How has a beelin adapted to its maturat?	Observing over time: Y5/6-How has the skeleton of the horse changed over time? Y4/5-How have Moths adapted over time? observe and measure
	Key scientist and Science capital opportunities: -Trip to the Natural History Museum Oxford -Active evolution workshop in school (science oxford) Charles Darwin (Naturalist and geologist) Barbara McClintock (American scientist and cytogeneticist) Alfred Russel Wallace (Naturalist and explorer)	Linked texts:
term 4	Electricity Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires,	How would you group different materials based on their electrical conductivity? present results
	bulbs, switches and buzzers. (Electricity) 4 Use recognised symbols when representing a simple circuit in a diagram. (Electricity) 6 Identify common appliances that run on electricity.	Comparative testing and fair testing: Which metal is the best conductor of electricity? Plan an enquiry and draw a conclusion
	(Electricity) 4 Recognise some common conductors and insulators, and associate metals with being good conductors. (Electricity) 4	Research and secondary sources: Y4/5-How has electricity changed the way we live? Y5/6- How has our understanding of electricity changed over time? Ask questions
	Key scientist and Science capital opportunities: -circuit detectives workshop (Science Oxford in school) -Visit from an electrician/ Science teacher from secondary school do create circuits	Linked text

	 Benjamin Franklin (Founding Father of United States, invented a lightning rod) Peter Rawlinson Engineer (Working on the development of electric vehicles) 	
term 5	Animals including humans Identify the different types of teeth in humans and their simple functions. (Animals, including humans) 4	Pattern seeking: Y4/5-Is there a relationship between a mammal's size and the amount it eats? Y5/6-Is there a pattern between what we eat for breakfast and how fast we can run? Gather and record results in a table Identifying, classifying and grouping: Y4/5-How can we organise teeth into groups?
	Describe the ways in which nutrients and water are transported within animals, including humans. (Animals, including humans) 6 Tak B: Transporting nutrients and water Create Side and Sam's model, or use your own leave, to demonstrate how the small and large interface and bases into the bibdostratem. To use the subscribed and pass into the bibdostratem. To user ed some or all of these resources: \overrightarrow{borl} \overrightarrow{ight} \overrightarrow{ight} \overrightarrow{banen} \overrightarrow{pier} \overrightarrow{mather}	Y5/6-Can you identify which teeth belong to which animal? Observe and interpret results Research and secondary sources: Y4/5-How do dentists fix broken teeth? Present their results Y5/6-Which nutrients are the best for healthy bone and teeth Evaluate (Discuss the degree of trust in the sources they used)
	Key scientist and Science capital opportunities: -Visit from a dentist William Harvey Ivan Pavlov (Digestive System- Mechanisms)	Linked texts:
term 6	Forces and magnets Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. (Forces and magnets) 5	Research and secondary sources: How do submarines sink if they're full of air? Ask Scientific questions
		Pattern seeking 4/5-Do all objects fall through water in the same way? 5/6-How does surface area of parachute affect the time it takes to fall? Present and interpret results
		Comparative testing and fair testing: How does the surface area of a parachute affect the time it takes to fall to the ground? Plan an enquiry
	Key scientist and Science capital opportunities: Isaac Newton (gravity)	Linked texts:

Year B (2024/25)			
upper school	(2024/25) Core knowledge	Scientific enquiry questions	
Year 4, year 5		(working scientifically skills)	
year 6	Light gene setting	Pattorn cooking	
	Animals including humans Describe the simple functions of the basic parts of the digestive system in humans. (Animals, including humans)4	Are foods which are high in energy high in sugar? Ask questions	
	Describe the changes as humans develop to old age. (Animals	Which exercise increases my heart rate the most? Plan an enquiry	
	including humans)5	Observing over time: Y5/6-How does my heart rate change over the day?	
	Identify and name the main parts of the human circulatory	Y4/5 -How does age affect human's hair?	
term 1	the heart, blood vessels and blood. (Animals, including humans)6		
	Key scientist and Science capital opportunities:	Linked texts:	
	-visit to a care home	HE BODY BOOK	
	-Heart dissection Santorio Santorio (Anatomist) Dr. Katherine Dibb (Expert in Cardiovascular Sciences) Leonardo Davinci (circulatory drawings) Gunther Von Hagens -circulatory system (artist)		
	States of matter	Pattern seeking:	
	Compare and group materials together,	Y4/5-How does temperature affect how	
	according to whether they are solids, liquids or	Y5/6-What patterns can you notice in	
	gases. (States of matter) 4	different reactions?	
	The transmit of the second of	Observe and measure	
		Observing changes over time:	
	Augestantive Herd heated or cooled, and Atter breating	change over time?	
	measure or research the temperature at	Y4/5-How does a sugar cube change as it is	
	(States of matter) 4	put in a glass of water?	
term 2		Present results	
	Identify the part played by evaporation and condensation in the	Y4/5-How does the temperature of tea	
	water cycle and associate the rate of evaporation with	affect how long it takes for a sugar cube to	
	temperature. (states of matter) 4	dissolve?	
		Y5/6 -Which type of sugar dissolves the	
	1255	fastest?	
		Evaluate and enquiry	
	Key scientist and Science capital opportunities:	Linked texts:	
	Bernard Palissy (French Potter and scientist)	Raindrop	

	Earth and Spacehttps://www.stem.org.uk/resources/community/collection/12347/year-5-earth-and- spaceDescribe the movement of the Earth, and other planets, relative to the Sun in the solar system. (Earth and space) 5Describe the movement of the Moon relative to the Earth. (Earth and space) https://www.stem.org.uk/elibrary/resource/29939		Research and secondary sources:Y5/6-How have our ideas about the solarsystem changed over time?Y4/5-What discoveries have astronautsfound out about Mars?Gather and record resultsIdentifying, classifying and groupingHow could you organise the objects in thesolar system?Can you observe and identify all the phases
term 3	Describe the Sun, Earth and Moon as approximately spherical bodies. (Earth and space) Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky. (Earth and space)		in the cycle of the moon? present results Pattern seeking: Is there a pattern between the size of a planet and the time it takes to orbit the sun? Gather and record results
	Key scientist and Science capital opportunities: - Visit Science oxford Zhang Heng (Recognised that the moon reflects the light from the sun) Prof Brian Cox Nicolaus Copernicus (Proposed that the Sun was the centre of our universe)	<image/>	
term 4	Forces and magnets Identify the effects of air resistance, water resistance and friction, that act between moving surfaces. (Forces and magnets) 5 Image: Colspan="2">Image: Colspan="2">Image: Colspan="2">Colspan="2" Identify the effects of air resistance, water resistance and magnets) 5 Colspan="2">Colspan="2">Colspan="2" Imagnets 5 Colspan="2">Colspan="2" Colspan="2">Colspan="2" Imagnets 5 Colspan="2" Colspan="2" <td< th=""><th></th><th>Identifying, classifying and grouping Can you label and name all the forces acting on the objects in each of these situations? present results Pattern seeking: Y4/5-Do all objects travel through water in the same way? Y5/6-Do bigger objects travel through water at a quicker pace? Observe closely Research and secondary sources: How did the Egyptians (or people through history) use levers, pulleys and gears to help them build? Ask questions</th></td<>		Identifying, classifying and grouping Can you label and name all the forces acting on the objects in each of these situations? present results Pattern seeking: Y4/5-Do all objects travel through water in the same way? Y5/6-Do bigger objects travel through water at a quicker pace? Observe closely Research and secondary sources: How did the Egyptians (or people through history) use levers, pulleys and gears to help them build? Ask questions
	Key scientist and Science capital opportunities: -Secondary school link science/ DT -knex construction loan from science oxford https://scienceoxford.com/kit-loan/knex-construction/ Galileo Galilei (Italian scientist) Emma England (Aeronautical engineer)	Linked te	xts: ROSIE REVERENCE REVERENCE REGINEER

term 5	Electricity Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. (Electricity) 4 Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. (Electricity) 4 Use recognised symbols when representing a simple circuit in a diagram. (Electricity) 6	Pattern seeking: Y4/5-Does the voltage of a battery affect the brightness of a light? Y5/6-Does the length of the circuit effect the brightness of a light? Gather and record results Observing over time: How long does a battery light a torch for? Observe and measure Research and secondary sources: How does a lightbulb work? Ask questions
	Key scientist and Science capital opportunities: -visit from an electrician Thomas Edison (American inventor)	Linked texts:
term 6	Animals and their habitats Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. (Living things and their habitats) 5 Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals. (Living things and their habitats)6 Mand microbes on bread Key scientist and Science capital opportunities: -Viewing micro-organisms under a microscope (microscope outreach) https://www.rms.org.uk/outreach/microscope-activity- kits/microscope-activity	Identifying, classifying and grouping: How would you make a classification key for vertebrates/invertebrates or microorganisms? Can you identify all the stages in a human lifecycle? How is this different and similar to the lifecycle of an amphibian? Present results Pattern seeking Is there a relationship between a mammals size and its gestation period? Present and interpret results What do different types of microorganisms do? Are they always harmful? Interpret results and draw conclusions Linked texts:

Year C			
(2024/25)			
upper school Year 4, year 5 year 6	Core knowledge	Scientific enquiry questions (working scientifically skills)	
term 1	MaterialsRecognise that some materials will dissolve in liquid to form a solution and describe how to recover a substance from a solution. (Materials) 5Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. (Materials) 5Demonstrate that dissolving, mixing and changes of state are reversible changes. (Materials) 5Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of 	Pattern seeking: How does temperature affect how much solute we can dissolve? How does the amount of bicarbonate of soda, washing up liquid and vinegar affect the reaction? Y5/6-What patterns can you notice in different reactions? Ask questions Identifying, classifying and grouping Can you identify and classify these reactions and changes into reversible, and irreversible? Y5/6- Can you describe their groups similarities and differences? present results Comparative testing and fair testing: Which material rusts fastest/slowest? Interpret results and draw conclusions	
	Key scientist and Science capital opportunities: Joe Keddie (professor of Soft Matter Physics at the University of Surrey)	Linked texts:	
term 2	Animals including humans Construct and interpret a variety of food chains, identifying producers, predators and prey. (Animals, including humans) 4 Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function. (Animals, including humans) 6	Observing changes over time: How much exercise do I do in a week? Observe and measure Pattern seeking: Does a person who exercises more have a higher lung capacity? Ask questions	
	Image: Control Image: Control Image: Control Image: Con	Research and secondary sources: Y5/6-How have our ideas about medicine changed over time? y4/5-What effect does smoking have on your body? Gather and record results	
	 Key scientist and Science capital opportunities: -Doctor visit to discuss health problems associated to smoking and drugs. Sir Richard Doll (Linking Smoking and Health Problems) Dr. Katherine Dibb (Expert in Cardiovascular Sciences) 	Linked texts:	

	Light Recognise that light appears to travel in straight lines. (Light) Use the idea that light travels in straight lines to	Research and secondary sources: Y4/5-Why do some people need to wear glasses to see clearly? y5/6-How do our eyes adapt to different conditions? Gather and record results
term 3	explain that objects are seen because they give out or reflect light into the eye. Explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes. (Light)	Comparative testing and fair testing: How does the angle that a light ray hits a plane mirror affect the angle at which it reflects off the surface? Plan an enquiry
		Observing over time: How does my shadow change over the day? observe and measure
	Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them. (Light)	
	Key scientist and Science capital opportunities:	Linked texts:
	-Light and shadow loan box from science oxford	
	Abu Ali al-Hasan (Alhazen) (Iranian mathematician, astronomer and physicist) Ernesta Jonkute (Developed Vantablack®)	
	Thomas Young (British Polymath)	
	Sound https://www.stem.org.uk/resources/elibrary/resource/315610/what-factors-affect-pitch-and-volume-sound Identify how sounds are made, associating some of them with something vibrating. (Sound)	Comparative testing and fair testing: y4/5 -How does the volume of a drum change as you move further away from it? Y5/6 -How does the length of a guitar string (tuning fork affect the nitch of the
	Recognise that vibrations from sounds travel through a medium to the ear. (Sound)	sound? Evaluate an enquiry Pattern seeking:
	Find patterns between the pitch of a sound and features of the object that produced it. (Sound) https://www.bbc.co.uk/bitesize/articles/zstr2nb	Is there a link between how loud it is in school and the time of day? If there is a pattern, is it the same in every area of the
term 4	Find patterns between the volume of a sound and the strength of the vibrations that produced it. (Sound)	Present results
	Recognise that sounds get fainter as the distance from the sound source increases. (Sound)	
	Key scientist and Science capital opportunities:	Linked texts:
	-sound workshop <u>https://hands-on-</u> science.co.uk/workshop/surprising-sounds/ <u>https://schoolofnoise.com/schools/school-workshop-curriculum-</u> information/	Can yours
	Christian Doppler (Austrian mathematician and physicist) Aristotle (Sound Waves) <u>Gailileo Galilei</u> (Frequency and Pitch of Sound Waves)	

	Electricity		Pattern seeking:
	Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. (Electricity) 4		Does the voltage of the batteries in a circuit affect the brightness of the lamp? Does the voltage of the batteries in a circuit affect the volume of the buzzer?
	diagram. (Electricity) 6	(Identifying, classifying and grouping
term 5	Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery (Electricity) 4		components and appliances based on what electricity makes them do? present results
	Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit. (Electricity) 6		Observing over time: Y4/5-How does brightness of bulb change as the battery runs out? Y5/6-How can we measure how quickly a battery is used up? observe and measure
	Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches. (Electricity) 6		
	Key scientist and Science capital opportunities:	Linked tex	rts:
	Peter Rawlinson (British engineer based in California)		
term 6	Living things and their habitats Describe the life process of reproduction in some plants and animals. (Living things and their habitats)5		Identifying, classifying and grouping: Can you organise plants and animals into groups based on how they reproduce? interpret results
	Recognise that environments can change and that this can sometimes pose dangers and have an impact on living things. (Living things and their habitats)4	Sector A	Research and secondary sources: Y4/5-What effect has deforestation had on the orangutan population in Borneo? y5/6-What impact have climate change activists had on the changing environment? How has the use of insecticides affected
			bee population? Present results
	Key scientist and Science capital opportunities: -Visit the living rainforest Lucy Cheesman (British entomologist) Sir David Attenborough (English broadcaster and naturalist) Dr Seirian Sumner (evolutionary biologist)	Linked tex	Image: state stat